Canadian Centre for Occupational Health and Safety

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CRAB WORKERS' ASTHMA

A Summary of the Occupational Health Concern

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CRAB WORKERS' ASTHMA--A SUMMARY OF THE OCCUPATIONAL HEALTH CONCERN

This publication was prepared as a source of information for health and safety committees and others with an interest in understanding and reducing the occupational risk of crab workers' asthma.

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1. WHAT IS CRAB WORKERS' ASTHMA?

Asthma is a respiratory disease. It creates obstruction of the air passages, which results in difficult breathing.

Crab workers' asthma refers to asthma that is caused by breathing in dust, mist or steam produced during the processing of crab. An abnormal response of the body to the presence of certain chemicals in crab meat or crab shell causes crab workers' asthma. The abnormal response, called "sensitization," develops after variable periods of workplace exposure.

This sensitization may not show any symptoms of disease or it may be associated with skin rashes (urticaria), hay fever-like symptoms as well as asthma.

Not all crab-processing workers develop asthma when exposed to crab. Crab workers' asthma strikes only a fraction of workers.

2. HOW DOES IT DEVELOP?

The mechanism that triggers crab workers' asthma is not completely understood, but in most cases it involves the body's immune system. To neutralize foreign materials that enter the body, the immune system produces special proteins called "antibodies." These antibodies remain in the bloodstream for long periods of time to defend the body against a subsequent exposure to the foreign material.

In the case of crab workers' asthma, when the person is re-exposed the antibodies react with the chemicals present in crab meat and crab shell. This reaction results in the release of natural substances that are responsible for narrowing the airways--a feature typical of asthma.

3. HOW LONG DOES IT TAKE TO DEVELOP?

Crab workers' asthma may develop from a few weeks to many years after the initial exposure. There is no fixed period of time. Studies carried out on crab-processing workers show that in most cases asthma develops in 6 to 12 months.

Analysis of the respiratory responses of sensitized workers has established three basic patterns of asthmatic attack--immediate, late and combined.

Immediate - Typically develops within minutes of exposure and is at its worst after approximately 20 minutes. Recovery takes about 2 hours.

Late - Can occur away from the workplace or during work. A late attack usually starts several hours after exposure and is at its worst after about 4 to 8 hours. Recovery is within 24 hours. But it can start one hour after exposure with recovery in 3 to 4 hours. In some cases, it may start at night, with a tendency to recur at the same time for a few nights following a single exposure.

Combined - Combines the patterns of both immediate and late types of asthma.

4. HOW COMMON IS IT?

The number of cases of crab workers' asthma is not known. It varies from plant to plant. Studies in two crab-processing companies in Canada showed that about 15 percent of workers had occupational asthma after 3 years of employment.

5. HOW IS IT RECOGNIZED?

Those who suffer from crab workers' asthma experience attacks of difficult breathing, tightness of the chest, coughing, and wheezing and other breathing sounds, which are associated with air-flow obstruction. Such symptoms should always raise the suspicion of asthma. Typically these symptoms are worse on working days, often awakening the patient at night, and improving when the person is away from work. While off work, sufferers from crab workers' asthma may still have chest symptoms when exposed to airway irritants such as dusts, fumes or upon exercise. Itchy and watery eyes, sneezing, stuffy and runny nose, and skin rashes are other symptoms often associated with asthma.

Lung function tests and skin tests can help to confirm the disease. But some patients with crab workers' asthma may have normal lung function as well as negative skin tests.

The diagnosis of work-related asthma needs to be confirmed objectively. This can be done by carrying out pulmonary function tests at work and off work. Specific inhalation challenges can demonstrate the occupational origin of asthma and may identify the agent responsible when the cause is uncertain. Specific inhalation challenge tests require breathing in small quantities of crab meat extracts that may induce an attack of asthma. But they are safe when performed by experienced physicians in specialized centres.

6. HOW CAN WE CONTROL IT?

Although there are drugs that may control the symptoms of asthma, it is important to stop exposure. If exposure to crab is not stopped, treatment will be needed continually and the breathing problems may become permanent and increase in severity. People may continue to suffer from crab workers' asthma even after removal of exposure. For example, 31 patients with crab workers' asthma were assessed between one and five years after leaving work. Fourteen patients continued to require medication after one year. Fifteen required it after two years and ten were still dependent upon medication after five years.

7. HOW CAN WE PREVENT IT?

Processing of crab involves several steps. Those that can cause crab workers' asthma include:

- cutting and separating the legs and claws
- boiling the whole crab
- crushing the shells

Separating the legs and claws with a saw creates fine mist or sawdust. Boiling the crabs releases mist and steam into the air, especially when removing the crabs from the boilers. Cooling the crabs also releases steam. Crushing the shells to remove the meat generates tiny particles that are released into the air.

The best way to prevent crab workers' asthma is to minimize exposure to the dust, mist and steam through engineering controls. Enclosing processes separates workers from the harmful substances. Using adequate local exhaust prevents the escape of toxic substances into the workroom. Properly fitted respirators approved for protection against toxic dusts and mists can help to control exposure. But personal protection should be the last resort method. Good housekeeping, including proper maintenance of the equipment to keep it free of dust is also important. Workers should be informed about the nature of substances they are exposed to and about work processes.

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